TDO BOGUS PROCEDURES

BACKGROUND:

There are, basically, two parts to a TC vortex; Symmetric and Asymmetric.

- Symmetric
  Central Pressure (max intensity)
  Radius and SLP of OMCI
  Radius of Wind Max
  4 (NE,SE,SW,NW) 35 kt wind radii

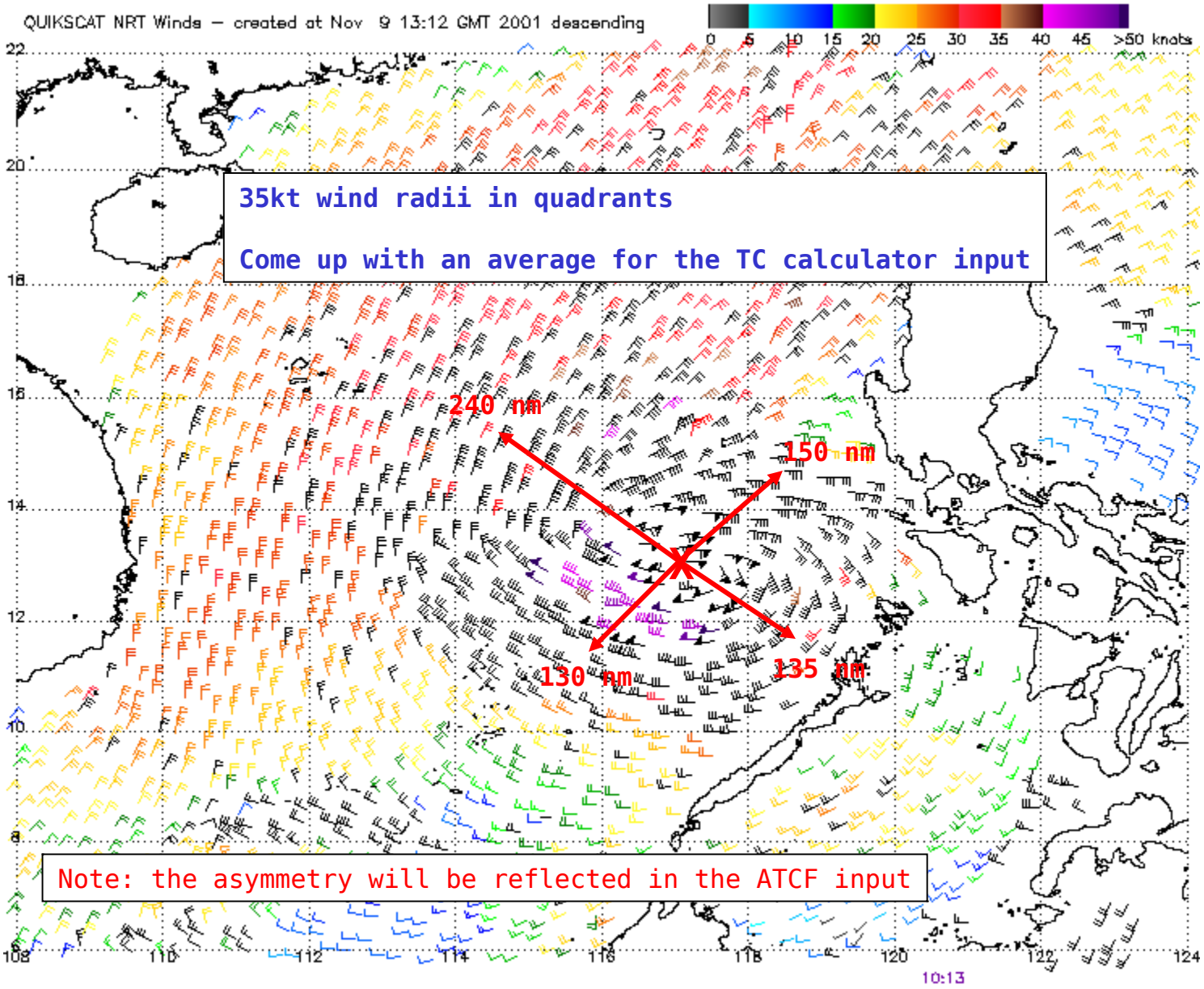
- Asymmetric (Induced by planetary advection by the symmetric flow within the vortex)
  Current motion
  Environmental Flow

Note: The structure of the asymmetry is dependent on the symmetric structure of the vortex. In other words, vortex asymmetry is dependent on your bogus input (ie, quadrant radii).

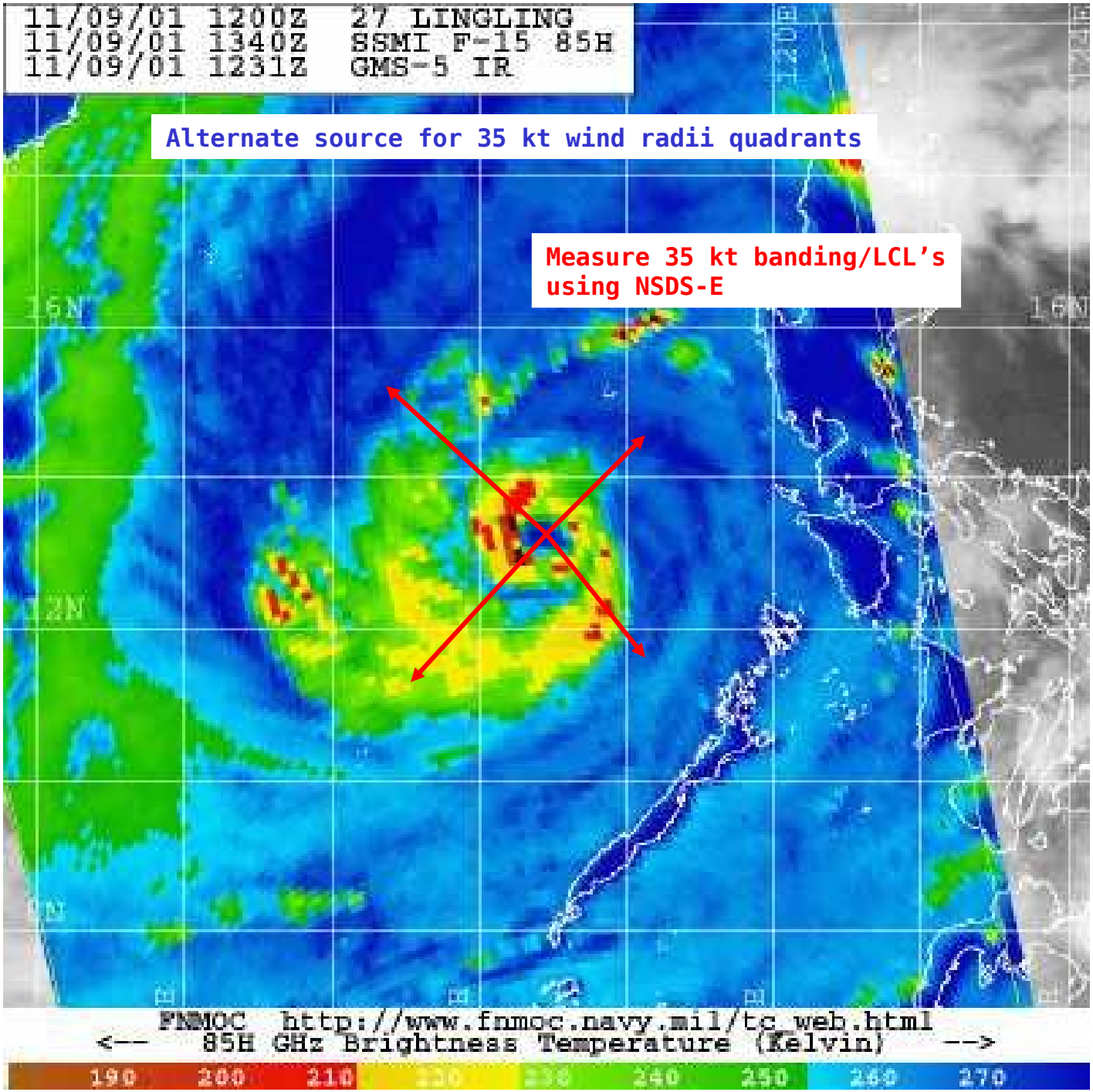
GOALS:

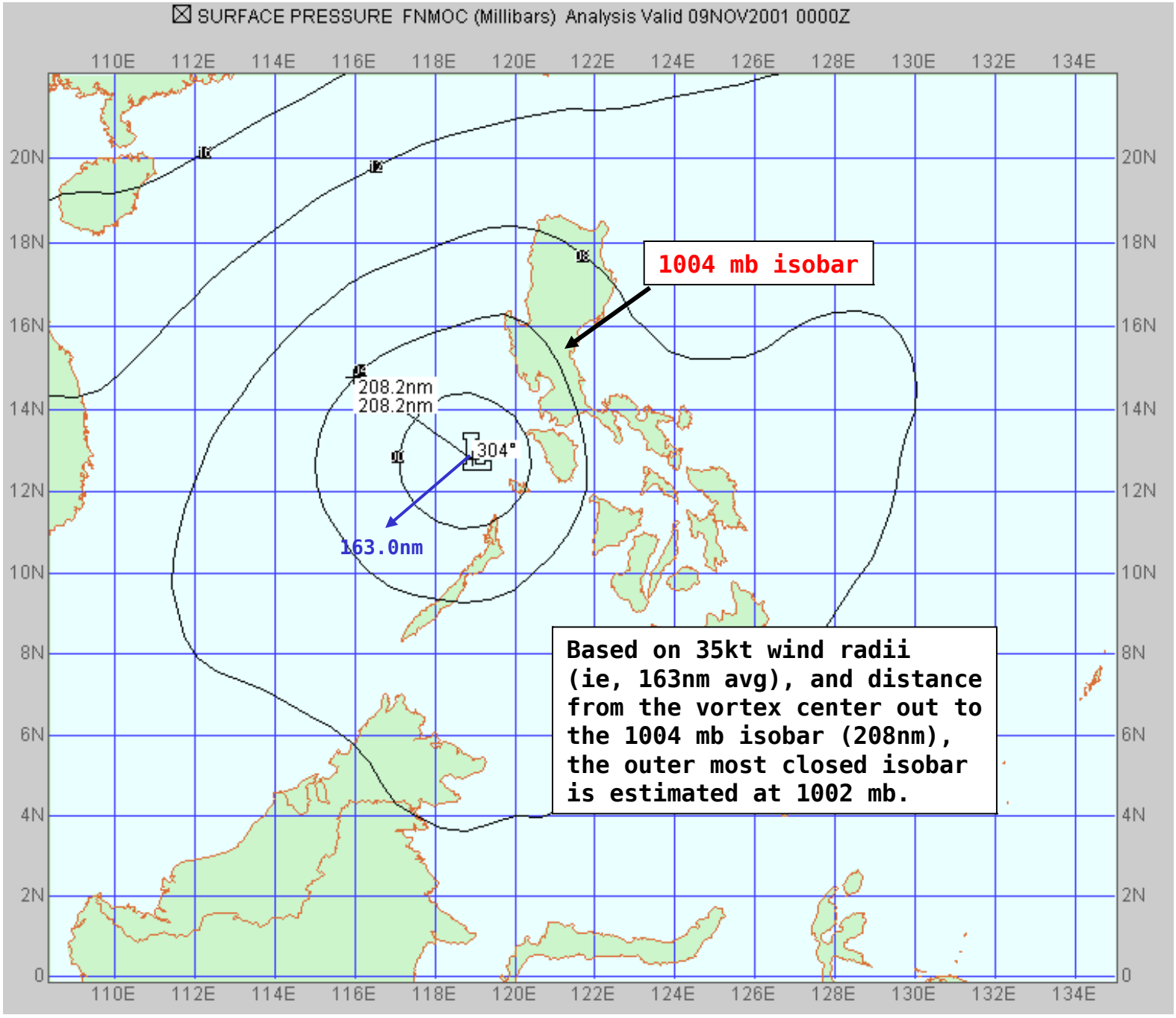
- Improve the position of the TC center

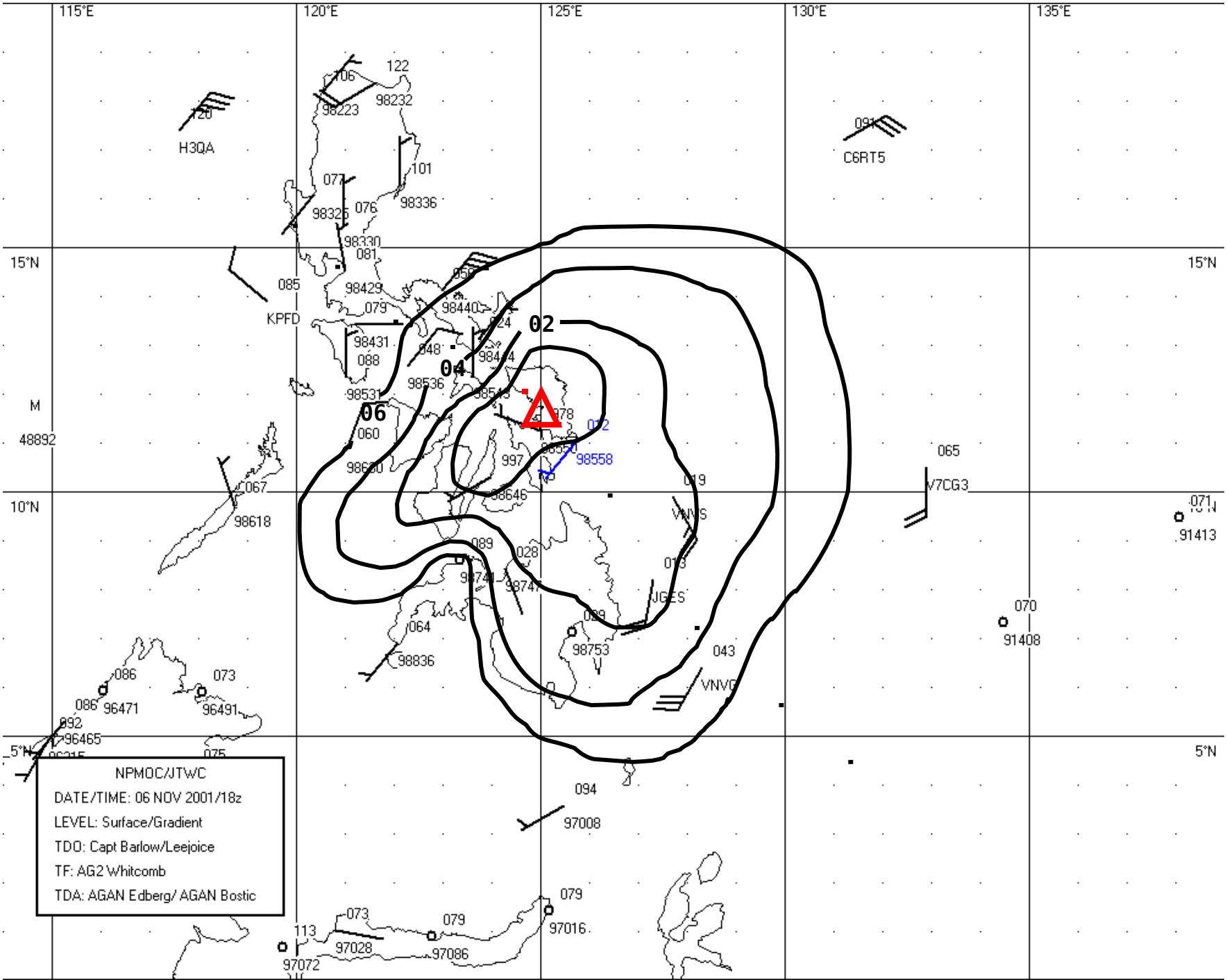
- Accurately reflect the intensity and structure of the vortex without degrading the model environmental structure



Storm number: 27 Storm name: LINGLING
Note: 1) Times are GMT 2) Black barbs indicate possible rain contamination
3) Data buffer is Nov 9 13:12 GMT 2001–22 hrs 4) Data pass times at bottom of image


11/09/01 1200Z 27 LINGLING
11/09/01 1340Z SSMI F-15 85H
11/09/01 1231Z GMS-5 IR
Alternate source for 35 kt wind radii quadrants
Measure 35 kt banding/LCL's using NSDS-E
16N
12N
8N
FNMOC http://www.fnmoc.navy.mil/tc_web.html
<-- 85H GHz Brightness Temperature (Kelvin) -->
190 200 210 220 230 240 250 260 270


SURFACE PRESSURE FNMOC (Millibars) Analysis Valid 09NOV2001 0000Z
110E 112E 114E 116E 118E 120E 122E 124E 126E 128E 130E 132E 134E
20N 18N 16N 14N 12N 10N 8N 6N 4N 2N 0
1004 mb isobar
208.2nm
208.2nm
304°
163.0nm
Based on 35kt wind radii (ie, 163nm avg), and distance from the vortex center out to the 1004 mb isobar (208nm), the outer most closed isobar is estimated at 1002 mb.

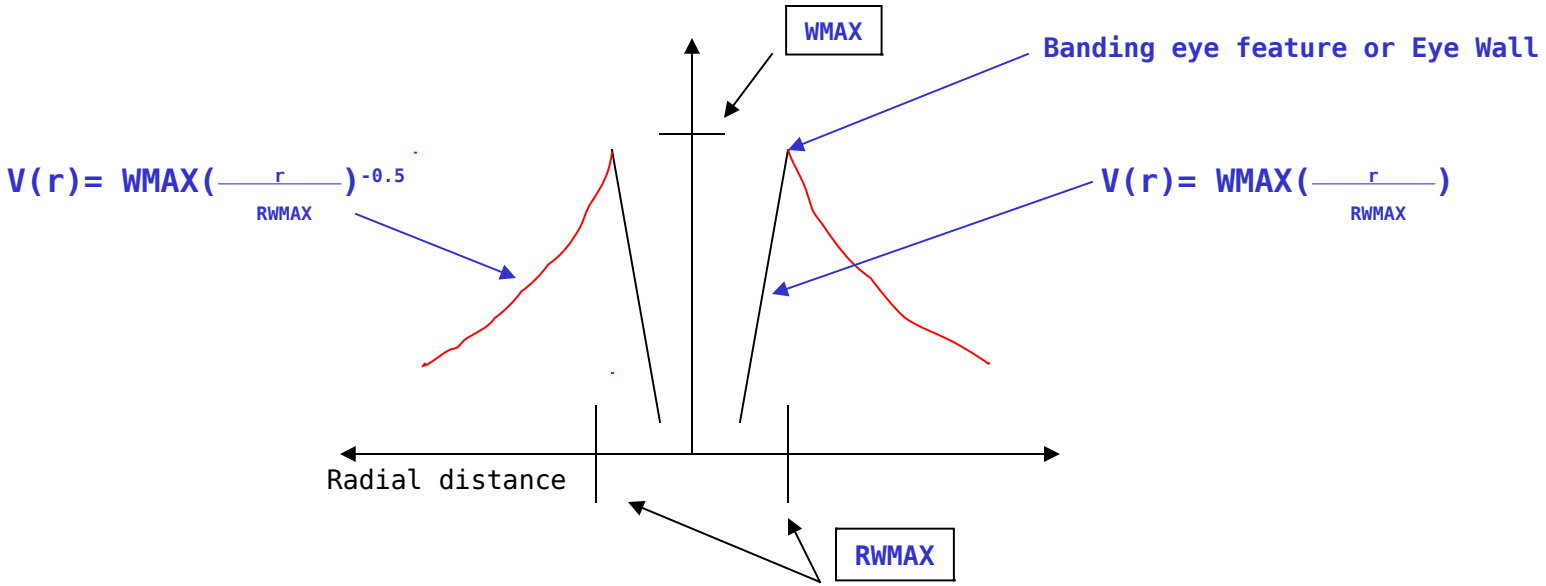

115°E
120°E
125°E
130°E
135°E
15°N
10°N
5°N
M
48892
91413
91408
H3QA
C6RT5
KPFD
V7CG3
02
04
06
98558
NPMOC/JTWC
DATE/TIME: 06 NOV 2001/18z
LEVEL: Surface/Gradient
TDO: Capt Barlow/Leejoice
TF: AG2 Whitcomb
TDA: AGAN Edberg/ AGAN Bostic

TC Size Calculator Formula

•Based on a Rankine Vortex

Rankine Vortex (Combined Vortex) - 2 separate wind fields

- **Interior** - tangential wind speed increases linearly with distance from the center of the TC.
- **Exterior** - measured from the radius of Max Wind. Decreases inversely with radius.



Necessary parameters for determining TC SIZE* based on a Rankine vortex:

Radius of Max wind	RWMAX(m)
Value of Max wind	WMAX (ms^{-1})
Radius of 18 m/s^{-1} wind	R_{18}

*Def: TC SIZE - The distance from the observed vortex position up to a distance from which the influence of the TC itself is assumed to be minimal.

TC Size Calculator Formula

In order to determine TC Size, we must first determine the radius of maximum winds (RWMAX)

To solve for RWMAX:

$$RMAX = R_{18}\left(\frac{WMAX}{18}\right)^{-1/0.5}$$

Where, R_{18} is the $18 m/s^{-1}$ (35kt) wind radii.

Then, solving for SIZE:

$$SIZE = 200\ 000_{(m)} + 2(RWMAX)$$

Where, 200 000 (200km) is a suitable constant needed to consider small values of R_{18} in the current horizontal distribution of bogus data.

TC Size Calculator

AVERAGE SIZE SYSTEM

Input Storm Intensity=	75	Kts converts to 38.58 m/s
Input 35kt wind radii=	163	Nm converts to 301876.00 meters
Radius of Maximum Winds=	24.64	nm or 45633.22 meters
Size of System=	157.27	nm or 291266.44 meters

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